Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS

VI SEMESTER B.TECH. MECHATRONICS

END SEMESTER EXAMINATIONS, JULY 2022

SUBJECT: AUTOMOBILE ENGINEERING [MTE 3251]

(25.07.2022)

Time: 3 Hours **MAX. MARKS: 50**

Instructions to Candidates:

- Answer **ALL** the questions.

Q. No		M	CO	PO	LO	BL
1A.	Discuss the conventional, semi-forward and forward Chassis in an automobile. Show their corresponding layout with an line diagram	5	1	1	1	L2
1B.	For a 4 wheeler with GVW of 1000kg, moving with a velocity of 100 kmph and coefficient of drag (c_D)=0.3, vehicle frontal area (A)=3.5m^2 , rolling coefficient (μ)=0.015 ,tyre radius of 0.35m calculate the aerodynamic drag, rolling resistance and gradient forces. Assume air density as 1.2 kg/m^3 and gradient of 10%	3	1	1	2	L3
1C.	Justify how camber and toe effect the tyre wear	2	4	2	2	L3
2A	Discuss how the IC engine performance can be increased by Variable Valve Timing technology	5	1	3	4	L3
2B	Show how the drivers braking force is amplified in hydraulic brake system	3	4	3	1	L2
2C	Justify how constant mesh gear box can avoid gear grinding	2	2	2	1	L2
3A	With respect to handling, weight distribution and steering explain the front engine front wheel drive architecture	5	1	1	2	L2
3B	Show the working of CDI ignition system along with its circuit diagram	3	1	1	1	L2
3C	Discuss the role of pressure plate in single plate disc clutch	2	2	2	1	L2
4A	In what scenarios are series and parallel brake system used discuss in detail	5	3	3	2	L3
4B	What are catalytic converters? Show the construction of a 3-way catalytic converter	3	1	3	7	L2
4C	Show an Ackerman steering system and enumerate its parts.	2	4	1	1	L2
5A	Discuss the role of torque converter in an automatic transmission system	5	2	2	1	L3
5B	Enumerate the components of Disc brake system and show its architecture	3	3	2	1	L3
5C	How muti point fuel injection is different than common rail direct injection .	2	4	1	2	L3

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